BRUHATH BANGALORE MAHANAGARA PALIKE

Name of the Agency : **Technical Manager (West),** KRIDL, Bangalore.

Name of the Work : Improvements to roads & drains near behind Widia Factory to Sriram Reddy House upto SWD in Ward No. 14, Bagalagunte, BBMP, Bangalore.

Estimate Cost : Rs.

QUALITY CONTROL REPORTS TO

Asst. Executive Engineer,
T. Dasarahalli Sub Division,
BBMP, Bangalore.

CIVIL-TECH CONSULTANTS & ENGINEERS

Building & Highway Material Testing Laboratory
NABL ACCREDITED LABORATOTY AS PER ISO / IEC – 17025:2005
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Basaveshwaranagar, Bangalore – 560 079.

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T-2377

Job No.: CTCE/BBMP/W.No.14/KRIDL/CSR-02/762c/CEMENT/2014-15 Date: 14.02.2015

TEST REPORT ON CEMENT

* CUSTOMER	:	**Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.
*AGENCY	:	**Technical Manager (West),** KRIDL, Bangalore.
*NAME OF THE WORK	:	Improvements to roads & drains near behind Widia Factory to Sriram Reddy House upto SWD in Ward No. 14, Bagalagunte, BBMP, Bangalore.
REFERENCE	:	BBMP/DZ/AEE/TDSD/PR/2014-15 Dated: 11.02.2015
SAMPLE ID	:	Cement – Sample 1
SAMPLE RECEIVED ON	:	11.02.2015
PERIOD OF TESTING	:	11.02.2015 to 14.02.2015

The results of the tests conducted on the cement sample are as follows:

Sl. No	Descriptions	Test Method as per IS	Test Result	Requirements as per IS: 8112-2013
1	Standard Consistency	IS-4031 (Part -4) 1988(RA-2009)	28.00 %	-
2	a) Initial Setting Time	IS-4031 (Part -5) 1988(RA-2009)	180 Minutes	Not Less than 30 Minutes
	b) Final Setting Time	IS-4031 (Part -5) 1988(RA-2009)	450 Minutes	Not More than 600 Minutes
3	Soundness by Le Chartlier Method	IS-4031 (Part-3) 1988(RA-2009)	1 mm	Not more than 10mm

*Information is furnished by the Customer/Representative.

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VISHWANATH .C
Quality Manager

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Job No.: CTCE/BBMP/W.No.14/KRIDL/CSR-02/762c/SAND-Gradation/2015-16 : 14.02.2015

TEST REPORT ON DETERMINATION GRADATION OF FINE AGGREGATES

* Customer : **Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.
* Agency : **Technical Manager (West),** KRIDL, Bangalore.
* Name of Work : Improvements to roads & drains near behind Widia Factory to Sriram Reddy House upto SWD in Ward No. 14, Bagalagunte, BBMP, Bangalore.

Reference : BBMP/DZ/AEE/TDSD/PR/2014-15 Dated: 11.02.2015

Technical Reference : IS : 2386 Part 1 - 1963 RA-2007

Sample ID : Fine Aggregates - Sample 1

Sample Received on : 11.02.2015

Date of Testing : 14.02.2015

Total Wt. of Aggregates in gms **1000**

Is Sieve Size in mm	Cumulative Weight Passing in %	Spec.Limits as per IS 383-1970 (RA- 2007)			
		Zone-I	Zone-II	Zone-III	Zone-IV
10	100	100	100	100	100
4.75	93.30	90-100	90-100	90-100	95-100
2.36	76.50	60-95	75-100	85-100	95-100
1.18	57.00	30-70	55-90	75-100	90-100
600 Micron	39.80	15-34	35-59	60-79	80-100
300 Micron	13.30	5-20	8-30	12-40	15-50
150 Micron	2.90	0-10	0-10	0-10	0-15

* Information is furnished by the Customer/Representative

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Remarks : This sample is under Zone-II specific limits.

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Job No.: CTCE/BBMP/W.No.14/KRIDL/CSR-04/804e/AGG/GR/2014-15 : 14.02.2015

TEST REPORT ON COARSE AGGREGATES

* Customer	: **Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.
* Agency	: **Technical Manager (West),** KRIDL, Bangalore.
* Name of Work	: Improvements to roads & drains near behind Widia Factory to Sriram Reddy House upto SWD in Ward No. 14, Bagalagunte, BBMP, Bangalore.
Reference	: BBMP/DZ/AEE/TDSD/PR/2014-15 Dated: 11.02.2015
Technical Reference	: IS : 2386 Part 1 -1963 RA-2007
Sample ID	: Coarse Aggregates (40mm) - Sample 1
Sample Received on	: 11.02.2015
Date of Testing	: 14.02.2015

Total Wt. of Aggregates in gms= **10000**

Is Sieve Size in mm	Cumulative Weight Passing in %	Spec.Limits as per IS 383-1970 (RA- 2007)	
		Graded	Single Sized
80	100	100	-
63	100	-	100
40	96.22	95-100	85-100
20	38.10	30-70	0-20
10	12.45	10-35	0-5
4.75	1.99	0-5	-

* Information is furnished by the Customer/Representative

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Remarks : This sample is under Graded specific limits.

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T-2377

Job No.: CTCE/BBMP/W.No.14/KRIDL/CSR-02/762c/CUBE/2014-15 26.03.2015

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

* Customer	: **Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.
* Agency	: **Technical Manager (West),** KRIDL, Bangalore.
* Name of the work	: Improvements to roads & drains near behind Widia Factory to Sriram Reddy House upto SWD in Ward No. 14, Bagalagunte, BBMP, Bangalore.
Reference	: BBMP/DZ/AEE/TDSD/PR/2014-15 Dated: 11.02.2015
* Sample ID	: Cement Concrete
Size of cubes	: 150mmx150mmx150mm
Cross Sectional Area	: 22500 mm^2
Technical Reference	: IS: 516-1959 (Reaffirmed 2008)
* Grade of Concrete	: M_{10}
Compressive Strength as on	: 28^{th} day
Sample Received on	: 26.03.2015

Sl.No.	* Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	26.02.2015	26.03.2015	8.123	256.8	11.41
2	26.02.2015	26.03.2015	8.216	268.4	11.93
3	26.02.2015	26.03.2015	8.324	282.3	12.55

* Information is furnished by the Customer/Representative

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Job No.: CTCE/BBMP/W.No.14/KRIDL/CSR-02/762c/Kerb Stone/2014-15

09.03.2015

CEMENT CONCRETE CORE (PRECAST SLAB) TEST REPORT

* Customer	:	**Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.
* Agency	:	**Technical Manager (West),** KRIDL, Bangalore.
* Name of work	:	Improvements to roads & drains near behind Widia Factory to Sriram Reddy House upto SWD in Ward No. 14, Bagalagunte, BBMP, Bangalore.
Reference	:	BBMP/DZ/AEE/TDSD/PR/2014-15 Dated: 11.02.2015
Techinical Reference	:	IS:516-1959 (Reaffirmed 2008), SP-24:1983.
Sample ID	:	Precast Slab
Sample Received on	:	06.03.2015
Date of Testing	:	09.03.2015

Sl. No.	Dia of Core D (mm)	Height of Core H (mm)	Core Wt (Kg)	Density of Core (kg / m^3)	H / D	Correction factor (Based on H/D)	Failure Load (kN)	Core Strength (N/mm^2)	Correction Factor for the Dia. (Strength of the Core x 1.08)	Corrected Cylinder Compressive Strength (N/mm^2)	Equivalent Cube Compressive Strength (N/mm^2)
1	50.00	75.00	0.369	2505.74	1.50	0.955	32.3	16.43	17.74	16.95	21.18
2	50.00	76.00	0.376	2519.67	1.52	0.965	32.4	16.52	17.84	17.21	21.52
3	50.00	77.00	0.382	2526.64	1.54	0.960	32.8	16.70	18.04	17.31	21.64

* Information is furnished by the Customer/Representative

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T-2377

Job No.: CTCE/BBMP/W.No.14/KRIDL/CSR-02/762c/CUBE/2014-15 28.03.2015

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

* Customer	: **Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.
* Agency	: **Technical Manager (West),** KRIDL, Bangalore.
* Name of the work	: Improvements to roads & drains near behind Widia Factory to Sriram Reddy House upto SWD in Ward No. 14, Bagalagunte, BBMP, Bangalore.
Reference	: BBMP/DZ/AEE/TDSD/PR/2014-15 Dated: 11.02.2015
* Sample ID	: Cement Concrete
Size of cubes	: 150mmx150mmx150mm
Cross Sectional Area	: 22500 mm^2
Technical Reference	: IS: 516-1959 (Reaffirmed 2008)
* Grade of Concrete	: M_{20}
Compressive Strength as on	: 28^{th} day
Sample Received on	: 28.03.2015

Sl.No.	* Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	28.02.2015	28.03.2015	8.089	478.6	21.27
2	28.02.2015	28.03.2015	8.135	498.7	22.16
3	28.02.2015	28.03.2015	8.217	483.5	21.49

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Job No.: CTCE/BBMP/W.No.14/KRIDL/CSR-02/762c/CUBE/2014-15 30.03.2015

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

* Customer	: **Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.
* Agency	: **Technical Manager (West),** KRIDL, Bangalore.
* Name of the work	: Improvements to roads & drains near behind Widia Factory to Sriram Reddy House upto SWD in Ward No. 14, Bagalagunte, BBMP, Bangalore.
Reference	: BBMP/DZ/AEE/TDSD/PR/2014-15 Dated: 11.02.2015
* Sample ID	: Cement Concrete
Size of cubes	: 150mmx150mmx150mm
Cross Sectional Area	: 22500 mm^2
Technical Reference	: IS: 516-1959 (Reaffirmed 2008)
* Grade of Concrete	: M_{20}
Compressive Strength as on	: 28^{th} day
Sample Received on	: 30.03.2015

Sl.No.	* Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	02.03.2015	30.03.2015	8.125	473.6	21.05
2	02.03.2015	30.03.2015	8.236	489.4	21.75
3	02.03.2015	30.03.2015	8.354	510.2	22.68

* Information is furnished by the Customer/Representative

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Job No.: CTCE/BBMP/W.No.14/KRIDL/CSR-02/762c/CUBE/2014-15 30.03.2015

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

* Customer	: **Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.
* Agency	: **Technical Manager (West),** KRIDL, Bangalore.
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Reference	: BBMP/DZ/AEE/TDSD/PR/2014-15 Dated: 11.02.2015
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Cross Sectional Area	: 22500 mm^2
Technical Reference	: IS: 516-1959 (Reaffirmed 2008)
* Grade of Concrete	: M_{20}
Compressive Strength as on	: 28^{th} day
Sample Received on	: 30.03.2015

Sl.No.	* Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	02.03.2015	30.03.2015	8.156	481.5	21.40
2	02.03.2015	30.03.2015	8.237	501.6	22.29
3	02.03.2015	30.03.2015	8.398	513.7	22.83

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06.03.2015

GRADATION FOR WMM
MORTH TABLE-400-11

Client : **Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.

Agency : **Technical Manager (West),** KRIDL, Bangalore.

Name of Work : Improvements to roads & drains near behind Widia Factory to Sriram Reddy House upto SWD in Ward No. 14, Bagalagunte, BBMP, Bangalore.

Reference : BBMP/DZ/AEE/TDSD/PR/2014-15 Dated: 11.02.2015

Date of Testing : 06.03.2015

Material : WMM

Sample Location : WMM Mix Plant

Oven Dry Wt (gm): 28650

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	875	875	3.1	96.9	95-100
22.4	9057	9932	34.7	65.3	60-80
11.2	5234	15166	52.9	47.1	40-60
4.75	4168.	19334	67.5	32.5	25-40
2.36	3354	22688	79.2	20.8	15-30
0.600	2218	24906	86.9	13.1	8-22
0.075	2419	27325	95.4	4.6	0-8

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Job No.: CTCE/BBMP/W.No.14/KRIDL/WMM/Gradation/2014-15

06.03.2015

GRADATION FOR WMM
MORTH TABLE-400-11

Client : **Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.

Agency : **Technical Manager (West),** KRIDL, Bangalore.

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Reference : BBMP/DZ/AEE/TDSD/PR/2014-15 Dated: 11.02.2015

Date of Testing : 06.03.2015

Material : WMM

Sample Location : WMM Mix Plant

Oven Dry Wt (gm): 28765

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	1056	1056	3.7	96.3	95-100
22.4	7652	8708	30.3	69.7	60-80
11.2	5147	13855	48.2	51.8	40-60
4.75	4788	18643	64.8	35.2	25-40
2.36	3984	22627	78.7	21.3	15-30
0.600	2665	25292	87.9	12.1	8-22
0.075	2248	27540	95.7	4.3	0-8

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Job No.: CTCE/BBMP/W.No.14/KRIDL/WMM/AIV/2014-15

06.03.2015

Aggregate Impact Value

IS: 2386 Part IV

Client	**Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, Bangalore.
Name of the Work	Improvements to roads & drains near behind Widia Factory to Sriram Reddy House upto SWD in Ward No. 14, Bagalagunte, BBMP, Bangalore.
Reference	BBMP/DZ/AEE/TDSD/PR/2014-15 Dated: 11.02.2015
Source / Location	WMM Plant
Type of Mix	Wet Mix macadam
Date of Testing	06.03.2015

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	382	385	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	82	85	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	300	300	
4	Aggregate Impact value = percent fines	21.47	22.08	
	100* (W_2/W_1)%			21.77

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

Note:

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06.03.2015

Aggregate Impact Value

IS: 2386 Part IV

Client	**Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, Bangalore.
Name of the Work	Improvements to roads & drains near behind Widia Factory to Sriram Reddy House upto SWD in Ward No. 14, Bagalagunte, BBMP, Bangalore.
Reference	BBMP/DZ/AEE/TDSD/PR/2014-15 Dated: 11.02.2015
Source / Location	WMM Plant
Type of Mix	Wet Mix macadam
Date of Testing	06.03.2015

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	383	387	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	83	86	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	300	301	
4	Aggregate Impact value = percent fines	21.67	22.22	
	100* (W_2/W_1)%			21.95

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

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Job No.: CTCE/BBMP/W.No.14/KRIDL/WMM/Shape.T/2014-15 : 06.03.2015

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	: **Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.
Agency	: **Technical Manager (West),** KRIDL, Bangalore.
Name of Work	: Improvements to roads & drains near behind Widia Factory to Sriram Reddy House upto SWD in Ward No. 14, Bagalagunte, BBMP, Bangalore.
Reference	: BBMP/DZ/AEE/TDSD/PR/2014-15 Dated: 11.02.2015
Technical Reference	: IS 2386(Part 1) 1963 (RA 2007)
Type of Mix	: Wet Mix Macadam
Date of Testing	: 06.03.2015

Result : Flakiness Index = **11.26%**

Elongation Index = **13.57%**

Result : Combined Flakiness & Elongation index **24.83%**

Comments:

Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

Note:

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DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	: **Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.
Agency	: **Technical Manager (West),** KRIDL, Bangalore.
Name of Work	: Improvements to roads & drains near behind Widia Factory to Sriram Reddy House upto SWD in Ward No. 14, Bagalagunte, BBMP, Bangalore.
Reference	: BBMP/DZ/AEE/TDSD/PR/2014-15 Dated: 11.02.2015
Technical Reference	: IS 2386(Part 1) 1963 (RA 2007)
Type of Mix	: Wet Mix Macadam
Date of Testing	: 06.03.2015

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Result : Flakiness Index = **11.52%**

Elongation Index = **13.27%**

Result : Combined Flakiness & Elongation index **24.79%**

Comments:

Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

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T-2377

Job No: CTCE/BBMP/W.No.14/KRIDL/CSR-03/7841/BC(QB)/2014-15 11.03.2015

TEST REPORT ON DETERMINATION OF BITUMEN CHARACTERISTICS

*CUSTOMER	:	**Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.
*AGENCY	:	**Technical Manager (West),** KRIDL, Bangalore.
*NAME OF THE WORK	:	Improvements to roads & drains near behind Widia Factory to Sriram Reddy House upto SWD in Ward No. 14, Bagalagunte, BBMP, Bangalore.
REFERENCE	:	BBMP/DZ/AEE/TDSD/PR/2014-15 Dated: 11.02.2015
SAMPLE ID	:	Bitumen
DATE OF SAMPLING	:	09.03.2015
DATE OF TESTING		09.03.2015 to 11.03.2015

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The results of the tests conducted on the bitumen sample using for Bituminous Concrete.

Sl. No	Description	Test Method as per IS	Test Result	Requirement as per IS:73:2013
1	Penetration at 25 ^{0}C, 1/10 mm	IS :1203 -1978 (RA-2009)	69	60 to 70
2	Softening point, ^{0}C	IS :1205 -1978 (RA-2009)	48	Min. 45
3	Ductility at 27^{0}C, cm	IS :1208 -1978 (RA-2009)	100 >	Min. 50
4	Flash Point, ^{0}C	IS :1209 -1978 (RA-2009)	290	Min. 220

*Information is furnished by the Customer/Representative.

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VISHWANATH .C
Quality Manager

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Job No.: CTCE/BBMP/W.No.14/KRIDL/BC/AIV/2014-15 11.03.2015

Aggregate Impact Value

IS: 2386 Part IV

Client	**Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, Bangalore.
Name of the Work	Improvements to roads & drains near behind Widia Factory to Sriram Reddy House upto SWD in Ward No. 14, Bagalagunte, BBMP, Bangalore.
Reference	BBMP/DZ/AEE/TDSD/PR/2014-15 Dated: 11.02.2015
Source / Location	Hot Mix Plant, Bangalore
Type of Mix	Bituminous Concrete
Date of Testing	11.03.2015

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Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	380	383	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	81	85	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	299	298	
4	Aggregate Impact value = percent fines 100* (W_2/W_1)%	21.32	22.19	21.75

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Comments:

→ Maximum allowable Aggregate Impact value for Bituminous Concrete is 24%

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Job No.: CTCE/BBMP/W.No.14/KRIDL/BC/Shape_T/2014-15 11.03.2015

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	**Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, Bangalore.
Name of Work	Improvements to roads & drains near behind Widia Factory to Sriram Reddy House upto SWD in Ward No. 14, Bagalagunte, BBMP, Bangalore.
Reference	BBMP/DZ/AEE/TDSD/PR/2014-15 Dated: 11.02.2015
Technical Reference	IS 2386(Part 1) 1963 (RA 2007)
Type of Mix	Bituminous Concrete
Date of Testing	11.03.2015

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Result : Flakiness Index = **11.46%**

Elongation Index = **13.25%**

Result : Combined Flakiness & Elongation index **24.71%**

Comments:

→ Maximum allowable Flakiness & Elongation Index for Bituminous Concrete is 30%

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Job No.: CTCE/BBMP/W.No.14/KRIDL/BC/Stripping/2014-15 13.03.2015

Stripping Value of Road Aggregates (Static Immersion Test)

IS: 6241

Client	**Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, Bangalore.
Name of the work	Improvements to roads & drains near behind Widia Factory to Sriram Reddy House upto SWD in Ward No. 14, Bagalagunte, BBMP, Bangalore.
Reference	BBMP/DZ/AEE/TDSD/PR/2014-15 Dated: 11.02.2015
Type of Mix	Bituminous Concrete
Date of Testing	13.03.2015

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Type of binder : 60/70
Percentage of binder used : 5.0% by wt.
Total weight of aggregate : 200 g
Total weight of binder : 10.0 g
Temperature of water-bath : 40° C

Observation Number	Stripping, Percentage	Average, Percentage	Average Retained Coating, %
1	2.6	2.77	97.23
2	2.8		
3	2.9		

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Comments:

→ Minimum allowable Aggregate retained coating for Bituminous Concrete is 95%

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Job No.: CTCE/BBMP/W.No.14/KRIDL/BC/Sp_Wa/2014-15 13.03.2015

Specific Gravity And Water Absorption Test

IS: 2386 Part III

Client	**Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, Bangalore.
Name of the Work	Improvements to roads & drains near behind Widia Factory to Sriram Reddy House upto SWD in Ward No. 14, Bagalagunte, BBMP, Bangalore.
Reference	BBMP/DZ/AEE/TDSD/PR/2014-15 Dated: 11.02.2015
Type of Mix	Bituminous Concrete
Source / Location	Hotmix Plant, Bangalore
Date of Testing	13.03.2015

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	W_1 g	2021	2022	2025	
2	Weight of basket suspended in water	W_2 g	750	750	750	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1271	1272	1275	
4	Weight of saturated surface dry aggregate in air	W_3 g	2040	2042	2045	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_S)$ g	769	770	770	
6	Weight of oven dried aggregate	W_4 g	2025	2022	2027	
7	Specific Gravity	$W_4/(W_3-W_S)$	2.633	2.626	2.632	2.631
8	Apparent Specific gravity	$W_4/(W_4-W_S)$	2.686	2.696	2.695	2.692
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.74%	0.99%	0.89%	0.87%

Comments:

→ Maximum allowable Aggregate Water absorption value for Bituminous Concrete is 2.0%

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Aggregate Gradation Test

IS : 2386 Part I

Client	**Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, Bangalore.
Name of the Work	Improvements to roads & drains near behind Widia Factory to Sriram Reddy House upto SWD in Ward No. 14, Bagalagunte, BBMP, Bangalore.
Reference	BBMP/DZ/AEE/TDSD/PR/2014-15 Dated: 11.02.2015
Sample I / D	Hot Mix Plant, Bangalore
Type of Mix	Bituminous Concrete (BC)
Date of Testing	13.03.2015

Total Weight of Sample: **5625** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Grade-II As per MORTH	Remarks
13.2	0	0.0	0	100	100	Gradation satisfies Grade II MORTH specification
9.5	482	8.6	8.57	91.43	90-100	
4.75	2882	51.2	59.80	40.20	35-51	
2.36	783	13.9	73.72	26.28	24-39	
1.18	451	8.0	81.74	18.26	15-30	
0.3	386	6.9	88.60	11.40	9-19	
0.075	325	5.8	94.38	5.62	3-8	

Total Weight of Sample: **5650** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Grade-II As per MORTH	Remarks
13.2	0	0.0	0	100	100	Gradation satisfies Grade II MORTH specification
9.5	395	7.0	6.99	93.01	90-100	
4.75	3062	54.2	61.19	38.81	35-51	
2.36	629	11.1	72.32	27.68	24-39	
1.18	434	7.7	80.00	20.00	15-30	
0.3	345	6.1	86.11	13.89	9-19	
0.075	495	8.8	94.87	5.13	3-8	

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Job No.: CTCE/BBMP/W.No.14/KRIDL/BC/Stability/2014-15 13.03.2015

TEST REPORT ON STABILITY OF MIX

Client	:	**Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.
Agency	:	**Technical Manager (West),** KRIDL, Bangalore.
Name of the Work	:	Improvements to roads & drains near behind Widia Factory to Sriram Reddy House upto SWD in Ward No. 14, Bagalagunte, BBMP, Bangalore.
Reference		BBMP/DZ/AEE/TDSD/PR/2014-15 Dated: 11.02.2015
Source of location	:	Hot mix Plant, Bangalore
Type of Mix	:	Bituminous Concrete
Date of Testing	:	13.03.2015

The results of the tests conducted on the Bituminous Concrete mix sample are as follows:

Sl. No	Description	Test Result 1	Test Result 2	Requirement as per MORTH (Table 500-19)
1	Marshal Stability, Kn	10.30	9.75	9 Kn (min)
2	Marshal flow, mm	3.15	3.10	2 – 4
3	Percent air voids in Mineral Aggregate	14.20	13.45	13 – 15
4	Voids in Compacted Mix	4.35	3.80	3 – 6
5	Percent Voids filled with Bitumen	69.80	70.15	65 - 75
6	Density, g/cc	2.27	2.26	--

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